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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/843,808	04/30/2001	Eric Coupart	109420	9962

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OLIFF & BERRIDGE, PLC
P.O. BOX 19928
ALEXANDRIA, VA 22320

EXAMINER

CUEVAS, PEDRO J

ART UNIT PAPER NUMBER

2834

DATE MAILED: 07/17/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/843,808

Applicant(s)

COUPART ET AL.

Examiner

Pedro J. Cuevas

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 13-35 is/are rejected.
- 7) ☒ Claim(s) 9-12 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 April 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5, 7.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Drawings

1. This application has been filed with informal drawings which are acceptable for examination purposes only. Formal drawings will be required when the application is allowed.

Specification

2. Applicant is reminded of the proper content of an abstract of the disclosure.

A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention pertains. If the patent is of a basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure. If the patent is in the nature of an improvement in an old apparatus, process, product, or composition, the abstract should include the technical disclosure of the improvement. In certain patents, particularly those for compounds and compositions, wherein the process for making and/or the use thereof are not obvious, the abstract should set forth a process for making and/or use thereof. If the new technical disclosure involves modifications or alternatives, the abstract should mention by way of example the preferred modification or alternative.

The abstract should not refer to purported merits or speculative applications of the invention and should not compare the invention with the prior art.

Where applicable, the abstract should include the following:

- (1) if a machine or apparatus, its organization and operation;
- (2) if an article, its method of making;
- (3) if a chemical compound, its identity and use;
- (4) if a mixture, its ingredients;
- (5) if a process, the steps.

Extensive mechanical and design details of apparatus should not be given.

3. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

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The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

4. The spacing of the lines of the specification is such as to make reading and entry of amendments difficult. New application papers with lines double spaced on good quality paper are required.

5. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 32-34 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

8. Claims 32 and 34 recite the limitation "the magnetic circuit". There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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10. Claims 1-4, 13-15, 18, 30 and 32-35 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 4,618,792 to Yates.

Yates clearly teaches the construction of a dynamoelectric machine having:

a flux-concentrating rotor comprising permanent magnets disposed between pole pieces and a stator with windings on teeth, wherein:

the shape of the pole pieces and the shape of the magnets are chosen in such a manner as to minimize the difference $L_d - L_q$ where L_d is inductance on the forward axis and L_q is inductance on the quadrature axis;

the teeth are of non-constant width, increasing in width with increasing distance from the rotor starting from a certain distance from their free ends;

the magnets are wedge-shaped when observed along the axis of rotation of the rotor, of width that tapers going away from the axis of rotation of the rotor;

the stator having n_{teeth} teeth, the rotor having n_{pairs} pairs of poles, and the electricity being AC having n_{phases} phases, wherein the number of teeth n_{teeth} is selected in such a manner as to satisfy the following relationship $n_{\text{teeth}} = n_{\text{pairs}} * n_{\text{phases}}$;

the stator has individual coils;

each pole piece has, on its side facing towards the stator, a face that bulges being convex towards the stator;

the rotor has at least one end cheek-plate of non-magnetic material, with the periphery thereof being set back from the edges of the magnets which are adjacent to the stator;

the magnetic circuit of the stator is made up of an assembly of sectors
defining air-gaps intersecting the teeth at half width;
the sectors have co-operating portions in relief on their docking sides;
the magnetic circuit of the stator is inserted by force into a cylindrical
case; and
constitutes a synchronous motor.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all
obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent
No. 4,618,792 to Yates in view of U.S. Patent No. 6,232,691 to Anderson.

Yates disclose the construction of a dynamoelectric machine as described above.

However, it fails to disclose:

pole pieces have cutouts and are engaged via said cutouts on splines on the shaft;
splines are formed integrally with a central portion of the shaft; and
gaps are left between the radially inner edges of the pole pieces and the shaft.

Anderson teach:

pole pieces have cutouts and are engaged via said cutouts on splines on the shaft;
and
gaps are left between the radially inner edges of the pole pieces and the shaft;

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for the purpose of providing an improved DC electric starter-generator having high starting torque, compact size and weight, increased efficiency and reliability, and being particularly suitable for a starter-generator for aircraft engines but also suitable for other applications.

It would have been obvious to one skilled in the art at the time the invention was made to use the pole pieces, splines and gaps disclosed by Anderson on the dynamoelectric machine disclosed by Yates for the purpose of providing an improved DC electric starter-generator having high starting torque, compact size and weight, increased efficiency and reliability, and being particularly suitable for a starter-generator for aircraft engines but also suitable for other applications.

13. With regards to claim 6, it would have been obvious to one having ordinary skill in the art at the time the invention was made to form the splines integrally with a central portion of the shaft, since it has been held that forming in one piece an article, which has formerly been formed in two pieces and put together, involves only routine skill in the art. *Howard v. Detroit Stove Works*, 150 U.S. 164 (1893). The term "integral" is sufficiently broad to embrace constructions united by such means as fastening and welding. *In re Hotte*, 177 USPQ 326, 328 (CCPA 1973).

14. With regards to claim 7, it would have been obvious to one having ordinary skill in the art at the time the invention was made to make the splines and the central portion of the shaft of a non-magnetic material, in particular of aluminum, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

15. Claims 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,618,792 to Yates in view of common knowledge in the art.

Yates discloses the claimed invention except for the rotating speed of the rotor and it's outside dimension in the radial direction.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to arrange the rotor to rotate in the range of 1,000 to 10,000 rpm and it's outside dimension in the radial direction lying in the range of 50 mm to 1 m, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

16. Claims 19-25 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,618,792 to Yates in view of U.S. Patent No. 4,896,839 to Curtis, Jr. et al.

Yates disclose the construction of a dynamoelectric machine as described above.

However, it fails to disclose a dynamoelectric machine wherein:

the stator has at least one individual coil comprising a substantially flat bundle of insulated wires wound around a winding axis in such a manner as to form a plurality of superposed turns, the cross-section of the bundle in the superposed turns having a long dimension that extends substantially perpendicularly to the winding axis of the coil;

the wires are of circular section;

the inside section of the coil is substantially rectangular;

the inside section of the coil is larger on one side than on the other, thereby enabling it to be mounted on a tooth presenting a complementary profile with a certain amount of clamping;

the wires are stripped at the electrical connection ends of the coil and curved to form hooks;

the coil has an inside section of long side longer than the axial dimension of the tooth on which the coil is engaged so as to leave a gap; and

the hooks are directed towards a midplane of the coil, perpendicular to the winding axis.

Curtis, Jr. et al. teach the use of an apparatus and method for winding a strip of material into an arcuate elongated passage by forming:

a substantially flat bundle of insulated wires wound around a winding axis in such a manner as to form a plurality of superposed turns, the cross-section of the bundle in the superposed turns having a long dimension that extends substantially perpendicularly to the winding axis of the coil;

the wires are of circular section;

the inside section of the coil is substantially rectangular;

the inside section of the coil is larger on one side than on the other;

the wires are stripped at the electrical connection ends of the coil and curved to form hooks; and

the hooks are directed towards a midplane of the coil, perpendicular to the winding axis;

for the purpose of providing a toroidal electrical transformer with continuous windings and a continuous wound core.

It would have been obvious to one skilled in the art at the time the invention was made to use the wires and winding method disclosed by Curtis, Jr. et al. on the dynamoelectric machine

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disclosed by Yates for the purpose of providing a toroidal electrical dynamoelectric machine with continuous windings and a continuous wound core.

17. With regards to claim 20, it would have been obvious to one having ordinary skill in the art at the time the invention was made to select the wires having a diameter lying in the range 0.3 mm to 2.5 mm, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

18. Claims 26-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,618,792 to Yates in view of U.S. Patent No. 4,688,951 to Guers.

Yates disclose the construction of a dynamoelectric machine as described above.

However, it fails to disclose a dynamoelectric machine having:

at least one detector comprising a magnetic field sensor mounted on the stator in such a manner as to detect the magnetic field of the magnets of the rotor from a location that overlaps a peripheral region of the rotor when the machine is observed on the axis of rotation of the rotor;

for n-phase AC, the machine having n detectors mounted on consecutive teeth close to an opening in a case of the machine;

wherein the detector(s) is/are fixed to the magnetic circuit of the stator so as to extend along the radial axis of a tooth and the or each detector includes not only a magnetic field sensor, but also a temperature sensor.

Guers teach the construction of a roller bearing with contactless transmission of electric signals having magnetic field and temperature sensors for the purpose of providing contactless transmission of electric signals between the roller bearing and the electric circuits.

It would have been obvious to one skilled in the art at the time the invention was made to use the sensor arrangement disclosed by Guers on the dynamoelectric machine disclosed by Yates for the purpose of providing contactless transmission of electric signals between the different parts of the dynamoelectric machine.

Allowable Subject Matter

19. Since allowable subject matter has been indicated, applicant is encouraged to submit formal drawings in response to this Office Action. The early submission of formal drawings will permit the Office to review the drawings for acceptability and to resolve any informalities remaining therein before the application is passed to issue. This will avoid possible delays in the issue process.

20. Claims 9-12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

21. The following is a statement of reasons for the indication of allowable subject matter: the prior art does not teach the construction of a dynamoelectric machine according to claim 5, wherein the cross section of each spline presents a profile having opposite sides with inclined portions at an angle θ to a radius passing through the middle of the spline, said angle being selected in such a manner as to make it possible for said splines to be made out of a material having weaker shear strength than the material used for making the pole pieces.

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22. Claims 10-12 are considered allowable by their dependence on claim 9.

Conclusion

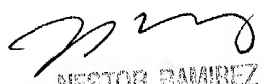
23. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See PTO-892.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pedro J. Cuevas whose telephone number is (703) 308-4904. The examiner can normally be reached on M-F from 8:30 - 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor R. Ramirez can be reached on (703) 308-1371. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-1341 for regular communications and (703) 305-3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Pedro J. Cuevas
July 11, 2002


NESTOR RAMIREZ
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800